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ABSTRACT

This guide presents Cooperation/Competition (C/C) as the next stage in the evolution of cooperative learning, with its unique ability to mobilize the powerful forces of intergroup and individual competition to supplement cooperative learning's teamwork. In C/C, teachers group students into homogeneous or heterogeneous learning teams, with teams competing against each other to see which can display mastery of a particular academic topic or other activity. Desired learning outcomes are reorganized so that student performance can be tested and tabulated in team and individual grades. This pamphlet explains why educators should consider combining cooperative and competitive strategies and how they use C/C to increase pupils' motivation to learn. It provides an overview of the operative principles of C/C, lists subjects treated in C/C formats, outlines strategic choices underlying C/C activities, describes planning and evaluation activities, discusses zero-sum and non-zero-sum competitions, and examines grading and motivation techniques. (JDD)

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Cooperation-Competition: An Instructional Strategy

Edward A. Wynne

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EDWARD A. WYNNE

Edward A. Wynne is a sociologist and professor in the College of Education at the University of Illinois at Chicago. He holds a law degree from Brooklyn Law School and a doctorate in education from the University of California at Berkeley. He is the author or editor of ten books and has written more than 100 professional articles for journals and chapters in collected works.

Wynne has conducted or overseen more than 600 studies of public and private elementary and secondary schools. His research focuses on youth character development and the ways in which social factors help or hinder student academic learning and development of values.

Wynne also is the author of fastback 312 *Planning and Conducting Better School Ceremonies*.

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Cooperation-Competition: An Instructional Strategy

by
Edward A. Wynne

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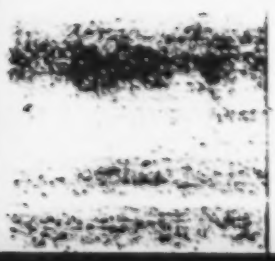

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Introduction

The more seriously competition is taken by adults, the more seriously it's taken by students. The fun and energy were in direct proportion to the number of printed schedules, posted rules, score calculations, and other accouterments of real competition.

(Evaluation of a school C/C activity.)

Cooperation/Competition is the next stage in the evolution of cooperative learning. C/C's unique component is its ability to mobilize the powerful forces of intergroup and individual competition to supplement the emphasis on teamwork that is associated with cooperative learning.

C/C in particular, and cooperative learning in general, are concerned with one of the most important issues in education: how to better motivate our students. We can get a clear perspective on this problem if we consider the kinds of complex learning that most adults acquire, such as how to participate in courtship and marriage; how to find a job and be successful in a career (often more than one career); how to find, buy, and maintain a home; and so on. True, not all adults fully succeed at such activities. Neither do all students succeed in school or college. But adults who do succeed usually do so without the help of trained teachers, formal curricula, and the whole infrastructure of education. The secret of adult learning success is that adult learners are motivated. In other words, if individuals want to learn, they find out how; if they

do not want to learn, a teacher's eloquence, creativity, or threats may not be enough to accomplish the task.

It also is instructive to contrast cooperative learning and athletic team competition. A major difference between cooperative learning and athletic team competition is that children and adolescents often are willing to participate in an athletic competition for the fun of it. They join some school athletic team or organize pick-up games on their own. Joining a team often means drills and hard work, as well as the fun of the games. How often do students set up a cooperative learning activity "just for fun"?

Team sports appeal because:

- many children — and adults — enjoy high levels of competition, especially when a non-zero-sum framework is used;
- most athletic games provide instant individual and collective feedback;
- there is a strong direct correlation between the willingness of athletic team members to strive and the amount of positive publicity or public recognition that the activity receives; and
- sometimes organizers take steps to equalize competition among athletic teams, typically by establishing leagues or otherwise weighting the competition for fairness.

This fastback explains how and why educators should consider combining cooperative and competitive strategies and use C/C to increase pupils' motivation to learn. Like many other promising approaches, C/C asserts certain principles and raises interesting questions. This fastback provides an overview of the operative principles of C/C and then attempts to respond to some of the more important questions that the approach raises.

Learning the Basics of C/C

Since 1990, C/C has been used in some 40 Chicago-area schools, including inner-city and suburban elementary and high schools. The C/C approach essentially was invented and diffused through the engagement of practicing educators — without significant external funding. This implementation has yielded promising results.

Each C/C activity concludes with the development of a written site report. This fastback draws on one such report that is exemplary in its analytic quality. Many other site reports contain information of a similar nature. Site evaluations are not rigorous statistical studies. There have not yet been sufficient resources or time to permit such studies. But encouraging research already completed on cooperative learning often is applicable to C/C.

C/C is best defined by its basic elements:

- Students are grouped by their teachers into either homogeneous or heterogeneous learning teams. The average level of competency of each team is as equal to the other teams as possible, since the aim is balanced competition.
- Teams compete against each other to see which can display mastery of a particular academic topic or other educationally beneficial activity.
- Teachers must identify the subject of the competition, which usually is their existing goals for improving student academic learning or conduct.

- Desired learning outcomes are reorganized so that student performance can be tested and tabulated in team and individual grades. Sometimes such tabulation is simple. For example, in a math contest, one might total the scores for each team member and then calculate the average for the team. The team with the highest average score wins. Other activities require more elaborate recordkeeping.
- Team scores are tabulated to publicly identify teams that are winners and runners-up. Often, individual player's scores also are tabulated and inserted into grade records.

C/C activities can be begun incrementally, for example, by a single teacher for part of one lesson. From a small start, C/C applications can grow in scope and complexity over time. Such incremental implementation can be useful. According to the site report:

> Patience is a virtue. The problems encountered in Week One were non-existent or tolerable by Week Nine. Teams did jell and cooperate with one another. The thrill of competition accomplished more than any amount of math drill could ever do.

C/C is essentially a low-cost innovation. While it takes planning and staff development to successfully incorporate C/C in a school or class, once in operation, routine costs can be incorporated into the regular school budget.

Some C/C teachers reported that reluctant colleagues merely observed the first activities. Teachers who have reservations about C/C should be encouraged to merely observe the activities at first, because it is unwise to draft reluctant teachers into new activities where voluntary engagement is so important. But sometimes the students of reluctant teachers became envious of the students engaged in the contest.

In one inner-city high school a discipline contest was held among competing homerooms. Classes that achieved lower rates of discipline referrals were designated as place winners. The standings of the competing classes were announced weekly over the school's public address

system, and the winners were identified. Winning classes participated in well-publicized pizza parties. When nonparticipating classes heard the announcements, some of the students asked their homeroom teachers, "Can't we get into that?" Thus nonparticipating teachers sometimes changed their minds.

Games are exciting partly because competing players see immediately whether their team is ahead or behind. In the same way, academic games are most effective if they give competitors fast feedback as to who is winning or losing. This is one reason for encouraging contests.

Typically, team scores are not counted in calculating each pupil's "permanent," report-card grade. But the teachers and the school also must ensure that teams have strong incentives to work for victory. Thus in elaborate or prolonged contests, each individual's score in the contest *should* count toward his overall class grade.

Building or finding a satisfactory bank of questions for C/C academic games can be a challenge. Sometimes teams of teachers work together to generate a bank. At the beginning of the year in one school, students were required to submit a number of questions developed from the class curriculum. Teachers then screened the questions and chose the best ones for the contest. Occasionally, student participants were so enthusiastic about an activity that they ran through the whole question bank ahead of schedule. But participating teachers also recognized that, over time, their stock of questions would enlarge.

Students without cooperative learning experiences usually need instruction about working together to help their team. Each team also needs time for practice or planning sessions. Some sessions should be monitored by the teacher so that adult counsel can be provided. And some sessions should be held away from teachers to encourage group self-development. The more student involvement in planning and implementation, the better. With few exceptions, when real responsibility is shared, real effort is demonstrated.

Literature on cooperative learning is especially useful in identifying ways to teach students to cooperate on teams. In addition, the scor-

ing system that is used should encourage cooperation. The approaches developed by Robert Slavin and his colleagues (see Resources section) can help in designing such a scoring system.

Common sense also says that as we increase team and student incentives to excel, we increase the temptations for cheating. Written rules should be drafted, approved by the students and adults, and explained to the players. Teachers must frankly discuss good sportsmanship and fair play. And it is wise to designate adults or older students as referees or judges. The site report concluded:

> Students take the issue of fairness very seriously. We were well advised to have trained adult and student referees and will increase that part of the program next year. This concern surfaced in the students' post game surveys.

Competitions should include all students, not just a few carefully screened teams. It is an inefficient use of school time to have a high proportion of students observing while only a few students actually compete.

Similarly, students with disabilities have been involved in C/C activities in a variety of ways. Some special schools or programs for handicapped students have conducted schoolwide C/C activities, for example, a C/C contest in a school for the deaf. Some special education students in mainstream situations or self-contained classrooms also have participated in C/C activities, such as attendance-contests and programs aimed at behavioral change. And some special education students have participated fully in regular C/C activities, depending on the nature of the competition.

Subjects and activities treated in C/C formats have included:

- math from enumeration through calculus
- reading
- spelling
- science
- general elementary curricula

- Deaf Olympics
- homework
- attendance
- discipline

The C/C Classroom

Suppose someone visited a classroom where C/C was an important part of the room's motivating system. What would they see and hear?

In many ways, the teacher's and students' conduct will be similar to most classrooms. But observers will see — typically posted directly on classroom walls or on large bulletin boards — scoreboards, signs, and other conspicuous displays of scores and team standings. These posters show the names of the students on each team and the comparative standing of teams based on different academic contests. The displays may identify the teams by using colorful logos and names that the students have designed or chosen. The scoreboards often portray each student's numerical contribution to his or her team's scores. The scoreboards also record nonacademic competitions, such as student attendance, homework completion, and so on.

As the class proceeds, the C/C structure will affect activities in a variety of ways:

- Some time will be provided for students to engage in team activities, such as planning, critiquing products of team members, and tabulating, reporting, and recording individual member scores. Other team meetings may occur away from the class (in the library, a study hall, the lunchroom), out of school, or by phone calls.
- During activities, the teacher moves among the teams or meets with each team individually. The teacher evaluates each team's ap-

proach to its immediate problem and, if necessary, suggests more appropriate forms of attack.

- The teacher counsels teams collectively and individually. The aim is not so much to motivate students to work — the competition should generate this effect — but to help teams effectively manage their work. Without such counseling, the team's enthusiasm may dissipate into frustration. Help involves process, such as team scheduling or delegating activities, and substantive matters, such as direct teaching to improve their spelling, arithmetic, or other skills.
- Much of a teacher's planning time is devoted to identifying problems and devising appropriate remedies. Sometimes the "remedy" is asking team members to exchange phone numbers and to call one another. Teams usually are capable of solving their own problems with a little encouragement and assistance.

Ideally, teachers should enable each team to solve any problems on its own through cooperation. Sometimes, it is wise for teachers to allocate responsibilities or roles among team members, such as assigning a group chairperson and secretary. Students may be assigned to take turns in such roles, perhaps on a monthly rotation.

Strategic Choices Underlying C/C Activities

Teachers should recognize a number of choices underlying C/C activities. Some are evident: What activities are appropriate for students of different ages or for students of varying academic capability? Teams of younger students will do better with either short activities or longer activities that the teacher has divided into manageable pieces.

Choice also involves the subject matter to be taught and the elaboration or complexity of particular assignments. It is better to start C/C topics with academic activities that easily produce number scores or grades, such as spelling, math, or objective tests, rather than with more qualitative assignments, such as written reports or poetry.

Another factor is the amount of experience that both the teacher and the students have had with cooperative learning in general and C/C in particular. More experienced teachers can design and carry out more complex and prolonged activities.

Educators also should be sensitive to the intensity of competition. Some competitions are intensified when parents are invited to attend, significant prizes are available, or the entire school is involved. Intense competition is neither good nor bad, but teachers should consider whether the intensity is appropriate for the students concerned and the nature of the contest.

Finally, the scope of the competition is a strategic choice. Should the competition be limited to one class? Should it involve several classes? The larger and more complex the competition, the more important it is that students and teachers have previous academic-team experience. The scoring system should be pretested carefully, and all the teachers involved must be committed to the project.

Planning C/C Activities

In the beginning, C/C involves more planning than typical lessons do. A basic element of planning is the creation of a list or schedule to identify the preteaching steps necessary for a particular C/C activity. Schedules are especially important when the cooperation of two or more teachers is needed or special materials are required. The schedule should list the steps in sequence and the anticipated completion dates. It can identify documents to be created, consultants to be used, meetings to be held, materials to be ordered or made (such as scoreboards and trophies), lesson plans to be developed, space to be requisitioned, and so on. In large C/C projects, the list also should specify the person or persons responsible for each item.

Developers of C/C projects have concluded that, once a school is making extensive use of the C/C strategy, it can reorganize staff assignments, for example, allocating planning and tabulation chores to one staff member.

Designing and laying out draft scoreboards for the contests is another planning tool. Scoreboards usually are needed to meet one requirement of a "game" — a public display of who is winning and losing. Often, several types of scoreboards are used: one for comparing class scores, another for comparing teams within classes, and a third for comparing individuals. This may mean making as many as ten or fifteen separate scoreboards for a schoolwide interclass competition.

Evaluating C/C Activities

Evaluation involves two elements. One is summative evaluation: Do C/C students learn as well as or better than non-C/C students? The other is formative evaluation: During the team learning process, is it working well? How can the process or strategy be improved?

In many cases, summative evaluation is readily available. C/C activities should generate both individual and team scores. One basic summative evaluation is to see if individual scores compare favorably with the scores of equivalent non-C/C students (or with the previous scores of the students, before they began C/C classes) on similar assignments. Other summative evaluation techniques involve such instruments as standardized tests.

Summative evaluation also needs to be concerned with such questions as:

- How much experience should be gained with C/C strategies before comparing C/C outcomes to non-C/C outcomes?
- How much extra work, if any, is required to make C/C regularly succeed? Such extra work is part of C/C's instructional "cost."

Formative evaluation is more subtle — and more important. How can teachers tell if things are going wrong during a C/C activity, and what can they do to correct problems?

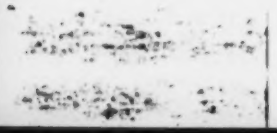
Things occasionally do go wrong in C/C activities, usually because students lack the necessary cooperative skills or they have been assigned activities that are too elaborate or demanding for their skill level.

Teachers identify and resolve such problems by carefully monitoring team meetings, asking questions to see if their instructions are clear, and reviewing information as needed.

By observing the working teams scattered through the room, teachers can see if things are going smoothly and prevent small problems from becoming big ones. If general problems arise, the teacher may suspend group work to instruct the entire class, make announcements, or give new instructions.

Teachers should consistently stress the basic cycle of teamwork: members report information and perceptions regarding their individual tasks, the team identifies problems and objectives, and tasks then are allocated among team members with a timetable for completion. The teacher should remind students not to leave any team meeting without knowing what they should do next. Individual responsibility is the key to successful teamwork.

Thus, by monitoring team meetings as a means of formative evaluation, teachers can shape a successful C/C experience. Students can assist in formative evaluation by giving direct feedback to teacher questions. And students can help in formative evaluation by responding to teacher questions with written suggestions for improvement and through whole-class follow-up discussions.



Zero-Sum and Non-Zero-Sum Competitions

Most educators hope that students will want to earn good grades and will be disappointed with low grades. Unfortunately, for many students, an emphasis on individual grades is insufficient motivation for learning. Frustration over motivating students by traditional grading practices was part of the impetus for the development of C/C.

Researchers — such as Coleman (1961) and Bishop (1989) — and teachers have identified the motivational shortcomings of assigning individual academic grades. Inevitably, not all students can excel when compared to other students. Excellent students who get good grades often cause less adept students to feel bad; thus the high-achievers sometimes become the targets of hostile remarks from low-achieving students. Negative feelings caused by student comparisons are evident in the adolescent vocabulary. Consider such common disparaging terms as "nerd" or "stein" (after Einstein). Such anti-excellence responses grow more intense as students mature.

The existing grading system is not a complete failure. Some highly motivated students persist in pursuing excellence, despite negative peer pressure. Other versatile students, with successful interpersonal skills, attain both academic excellence and popularity. But all too many students abandon or relax their academic aspirations in the face of negative peer interactions. However, despite the evident frustrations some forms of competition can generate, educators also see — in part, from observing student interest in competitive athletics — that competition can be a powerful motivating force.

Grading and competition that are harmful rely solely on win/lose contests. Less divisive competitions are more positive. C/C encourages competition in which players compete individually against each other but also cooperate in a team against an external opponent or obstacle.

Many team sports employ a similar competitive framework. Consider two volleyball teams competing against each other. A "zero-sum" game is under way between the two teams; if one team wins, the other loses. However, at the same time, another competition is under way within each team among the individual players. This competition is a "non-zero-sum" game — a cooperative/competitive activity. By contrast, if four golf players — or fifty runners in a marathon — are all competing against each other, they are playing zero-sum games in which only a win/lose outcome is possible.

Non-zero-sum "games" can be found in many forms of business operations, in some board games, and in group musical or dramatic performances. In the ideal non-zero-sum situation, players strive both to excel over their teammates and to achieve a team victory. In this way, non-zero-sum games treat life as a series of overlapping circles. The base is the individual, typically out for his or her own interests. Each individual "circle" overlaps with other circles. Thus the individuals cooperate and create larger, more encompassing circles.

If a competitor becomes too self-centered, he or she handicaps the larger circle. The individual may win personally, but the team will lose. And the other team members will respond negatively toward the selfish member. Such negative peer pressure works positively, in this instance, to encourage cooperation within the competition. C/C helps students to balance personal interests and group loyalties, which is an important life skill.

No one would suggest that the concept of non-zero-sum teaming is novel. For example, some elementary teachers who organize their classes into teams to improve student conduct are creating non-zero-sum approaches. The teacher watches the class carefully. When a student is "caught" doing a courteous act during class, the teacher drops

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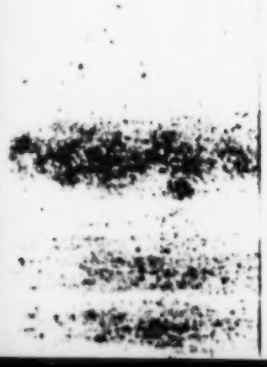
a marble into a jar on the desk. When the jar is full, the teacher treats the whole class to a pizza party. The use of the jar of marbles can transform the class environment, because now individual student courtesy benefits everyone. Whispers about "teacher's pets" end; courtesy becomes a class norm.



Grading and Motivation in the C/C Strategy

C/C stresses the use of grades to provide students with feedback and motivation. This emphasis differs from the practices now applied by many proponents of cooperative learning. For example, many forms of cooperative learning do not give either teams or individual students any grades at all. Some cooperative learning strategies give students grades related only to their previous academic record (in other words, are they improving?) or otherwise downplay the importance of individual grades or team scores.

C/C proponents believe in grading as a "graduated" form of evaluation, which is of critical importance in education. Graduated forms of academic assessment serve two important purposes: 1) students get clear feedback about how well they are doing, and 2) students are stimulated to work harder.

Students in C/C activities should be provided with team grades and individual grades or evaluations of their performance. Such grades permit students, their families, and educators to evaluate the student's (and the team's) improvement over past performance and level of learning as compared to the learning of other students and groups.

When individual grades are given in a substantive C/C activity, they usually should "count" toward class standing, earned academic credits, listing on an honor roll, and other forms of academic recognition. Typically, such individual grades will be in traditional letter or number form. Grades may be determined by a "curve" or by some form of clear, defined, objective measure. However, in either case, individual

grades typically should distinguish students' varying levels of competency at the same grade level. In other words, the gradations will make the distinctions among students.

Individual evaluation, as represented by grades, gives students feedback about the quality of their personal learning. Indeed, without clear and accurate evaluation, it is hard for students, or any other learner, to seriously pursue academic excellence.

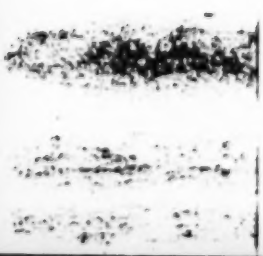
Making comparisons, which grading explicitly does, is a touchy business. However, it is hard to do important or difficult work with other people without making comparisons. We inevitably are provoked to consider who is better or worse at certain types of activities, regardless of whether the activity is typing, surgery, giving directions, or simply being reliable. In practice, we often make comparisons even when the choices before us seem to be trivial, such as choosing between different brands of gasoline.

A way to moderate the stress of student evaluation for both students and teachers in many academic activities is to use only narrative evaluations. Such evaluations blunt the comparative element. Narrative evaluation has long been applied in education on some occasions, and the approach is useful in many situations. But, to be fair, students need to experience a variety of forms of feedback to assist their learning. Narrative evaluations alone are insufficient.

There also are emotional rewards generated by exceeding either one's own previous performance or the performance of some other individual or team. Experienced athletic coaches have a rich understanding of such incentives. They know that if an athlete wants to run or swim his or her best time in a workout, it is wise to make the athlete compete directly against another athlete. Theoretically, the person being timed might run just as fast against the clock, trying to beat his or her former record. But coaches consistently have seen that the best times are achieved in interpersonal competitive trials. This pattern demonstrates the powerful emotional incentives generated by personal competition within a team, or cooperative, context.

In designing incentives for academic excellence, we should learn from coaches' experiences. We should stimulate students to attain excellence by stressing evaluations that compare their achievements to those of other students, as well as to their own previous performance. Team grades, or scores, should be given symbolic recognition, public praise, or some other acknowledgment that is similarly motivating.

In sum, without individual comparative grades, students do not receive fair feedback about how they are doing. Nor are they provided with adequate incentives to truly pursue excellence. Sometimes, students and their families may be upset by being subjected to grade pressure or by receiving the "bad news" that they have not achieved excellence in some activity. However, we owe our students an honest evaluation. Lack of honest, comparative evaluation is merely an evasion; and the disillusionment generated by a later discovery that the student is less skilled than he or she believed can lead to deep embitterment and loss of motivation.



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Some Final Thoughts on Competition

Many educators hold strong views against competition. To some degree, such views are appropriate for persons striving to form wholesome communities for young children. Young children *can* be subjected to excessively intense competitive pressures.

Educators' hostility toward competition also is sharpened by the noncompetitive character of educational work. Teachers' salaries and assignments are determined largely by length of service and level of education, not quality of work. Teachers rarely compete with each other for raises or promotions. Teachers are people who have chosen to work in relatively noncompetitive environments, and so educators may be expected to view competition somewhat negatively.

But educator resistance to competition sometimes goes too far. For example, many anti-competition educators make no distinction between zero-sum and non-zero-sum competition. That distinction is important.

Competition pervades the business environment. But within most businesses, the emotional environment often is more supportive — and enthusiastic — than in many schools. Business employees are playing non-zero-sum games. They compete with each other within the company, and they also try to make the company succeed in the larger sense of business competitiveness. If they do not support one another inside the company, then the company itself will likely fail. Thus most employers are deeply concerned about stimulating both competitive and cooperative attitudes among employees.

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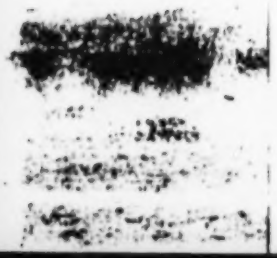
In contrast, in many classrooms the aspirations for excellence are lower than in many jobs. Much in-school competition is zero-sum. Why should any student care about the welfare of the class as a whole? Zero-sum competition is the most divisive form of competition. Consequently, typical school competitions are both less intense and more emotionally negative than those occurring in business. Indeed, employers often complain that beginning employees lack cooperative and interpersonal skills, which are precisely the skills required (and learned) in a non-zero-sum environment.

C/C offers an instructional strategy that combines the most successful elements of cooperative learning with the positive advantages of motivating competition.



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Phi Delta Kappa Fastbacks

Two annual series, published each spring and fall, offer fastbacks on a wide range of educational topics. Each fastback is intended to be a focused, authoritative treatment of a topic of current interest to educators and other readers. Several hundred fastbacks have been published since the program began in 1972, many of which are still in print. Among the topics are:

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Computers
Curriculum
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Dropout Prevention
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Legal Issues
Mainstreaming
Multiculturalism
Nutrition
Parent Involvement
School Choice
School Safety
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Staff Development
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Urban Education
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Vocational Education
Writing

For a current listing of available fastbacks and other publications of the Educational Foundation, please contact Phi Delta Kappa, 408 N. Union, P.O. Box 789, Bloomington, IN 47402-0789, or (812) 339-1156.

Phi Delta Kappa Educational Foundation

The Phi Delta Kappa Educational Foundation was established on 13 October 1966 with the signing, by Dr. George H. Reavis, of the irrevocable trust agreement creating the Phi Delta Kappa Educational Foundation Trust.

George H. Reavis (1883-1970) entered the education profession after graduating from Warrensburg Missouri State Teachers College in 1906 and the University of Missouri in 1911. He went on to earn an M.A. and a Ph.D. at Columbia University. Dr. Reavis served as assistant superintendent of schools in Maryland and dean of the College of Arts and Sciences and the School of Education at the University of Pittsburgh. In 1929 he was appointed director of instruction for the Ohio State Department of Education. But it was as assistant superintendent for curriculum and instruction in the Cincinnati public schools (1939-48) that he rose to national prominence.

Dr. Reavis' dream for the Educational Foundation was to make it possible for seasoned educators to write and publish the wisdom they had acquired over a lifetime of professional activity. He wanted educators and the general public to "better understand (1) the nature of the educative process and (2) the relation of education to human welfare."

The Phi Delta Kappa fastbacks were begun in 1972. These publications, along with monographs and books on a wide range of topics related to education, are the realization of that dream.